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entan

HIGH ANTIOXIDANT POWER

SWINE

cell truster
igusol project

The **CELL TRUSTER** project credits **entan** as a potent protector against cellular oxidative stress.

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HIGH ANTIOXIDANT POWER

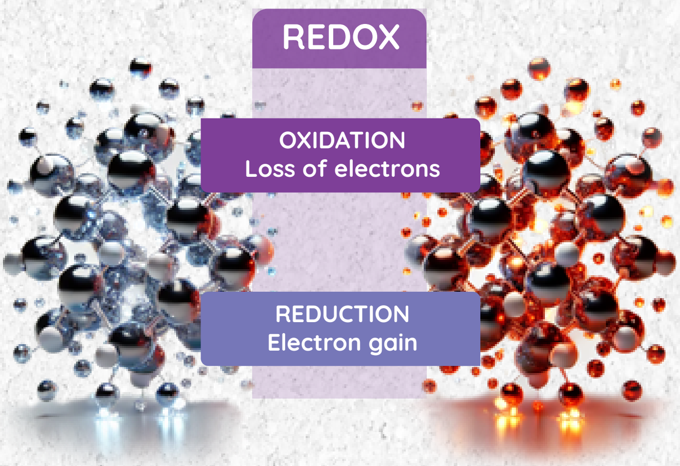
SWINE

COUNTERACTING THE EFFECTS OF OXIDATIVE STRESS AT THE SYSTEMIC LEVEL

To provide an affordable source of animal protein for the world's growing population, animals have been genetically selected for higher productive potential, leading to a higher **metabolic demand**.

In animal production, this high metabolic pressure alters physiological processes, **increasing the formation of free radicals** and hindering the control of oxidative stress at the systemic level.

Many metabolic reactions, such as those related to ATP production and growth, are oxidation-reduction (REDOX) reactions, where electrons are transferred between molecules, generating changes in their oxidative states.

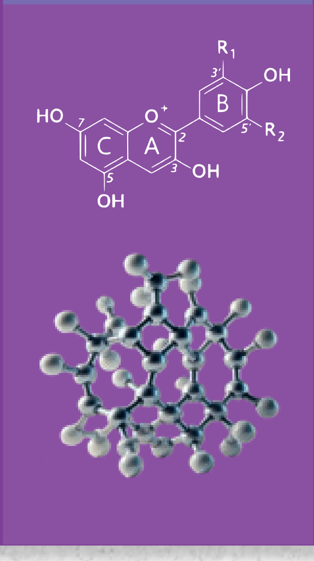


Antioxidants are molecules that can **DONATE ELECTRONS** without destabilizing

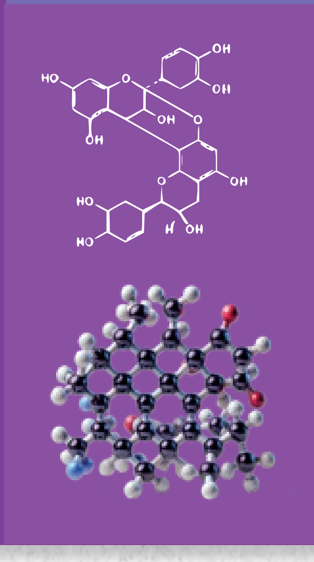
1. Eliminate free radical-forming agents
2. Chelate metal ions acting as an oxidative base

entan is a natural antioxidant based on **polyphenols** obtained from grape extracts (*Vitis vinifera*) with a high antioxidant power

ANTHOCYANINS



PROANTHOCYANIDINS



MODE OF ACTION

FREE RADICAL CHELATOR

The **ORAC** (Oxygen Radical Absorbance Capacity) value, is a measure used to quantify the antioxidant capacity of a compound.

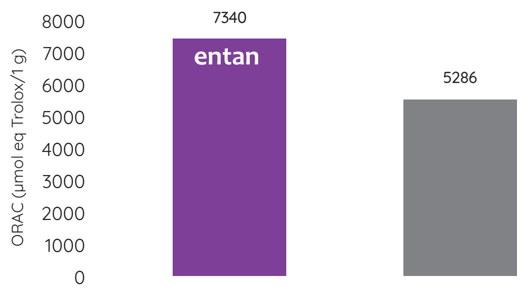
This value is determined by laboratory tests that measure the **antioxidant** (AOX) capacity to neutralize free radicals.

entan

High
AOX capacity

ORAC value
7340
µmol eq Trolox/1 g

AOX capacity comparison of
entan vs. a commercial competitor



Improved ability to combat oxidative stress and enhanced cellular protection

More AOX capacity

Increased ORAC value

OBJECTIVE

Using cell lines to explore the function of organic compounds is fundamental in animal nutrition. Evaluating additives intended to improve animal production at this level is an advantage due to the complexity and variability of *in vivo* testing.

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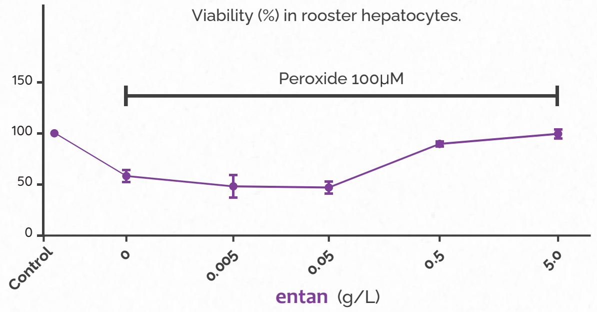
EXPERIMENTAL DESIGN

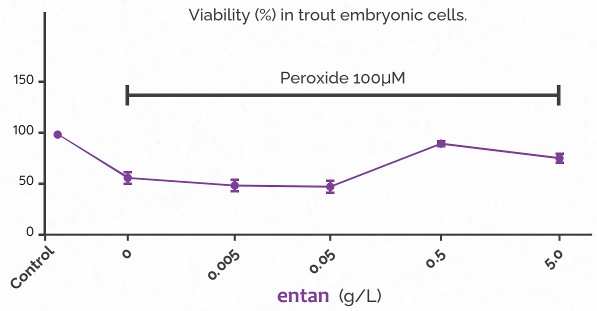
This study investigated the antioxidant properties of **entan**, using two cell lines:

1st CHSE-214 cells derived from trout (*Oncorhynchus tshawytscha*) embryos.

2nd LMH cells derived from rooster (*Gallus gallus*) hepatocytes.

RESULTS

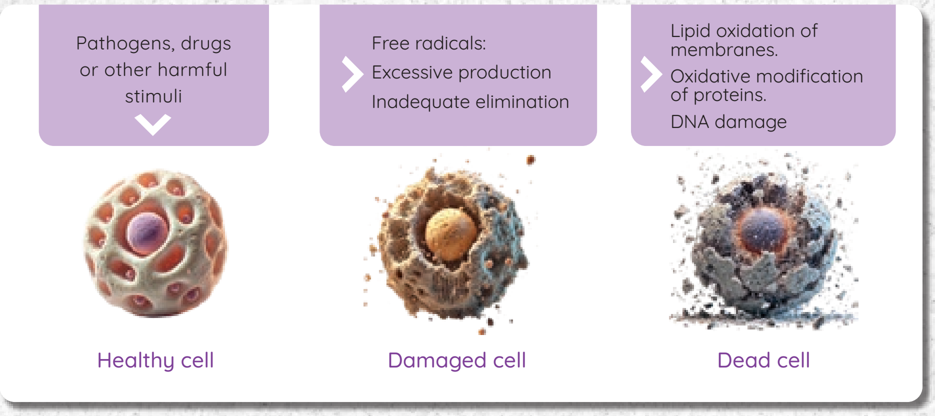




The antioxidant properties of the compound were evident, with a 100% recovery in both cell lines when exposed to hydrogen peroxide (0.1 µM.).

MODULATION OF THE FATTY ACID PROFILE

It modulates the **PUFA** profile by protecting them from free radical damage such as oxidative stress and lipid peroxidation, which ensures that these fatty acids can fulfill their physiological functions, such as preserving the structure of cell membranes and taking part in key metabolic processes.



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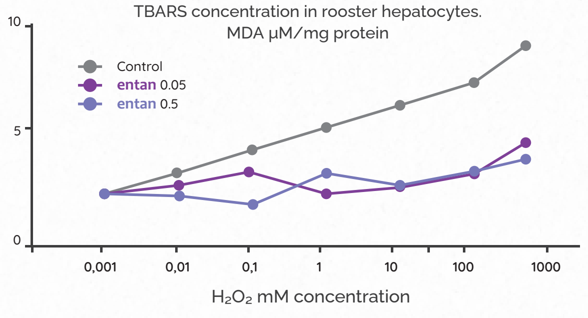
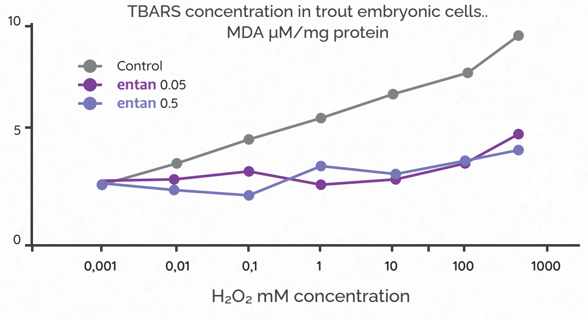
Protection against unsaturated fatty acid oxidation **(PUFA)**





It also effectively reduced cellular aging caused by metabolic processes, as measured by the formation of TBARS in both cell lines, going from 5 MDA µ M/mg protein to 2.5 MDA µM/mg protein when used at 0.05 or 0.5 g/L.

CONCLUSIONS

entan can minimize the increase in the concentration of free radicals in cellular models, thus protecting the cells. These results can be extended to the animal production level.

entan reduces oxidative stress with a dose-effect relationship, which resulted in less lipid oxidation in both cell models and improved membrane quality, allowing an increase in cell viability even under metabolic stress, such as those found in animal production models.

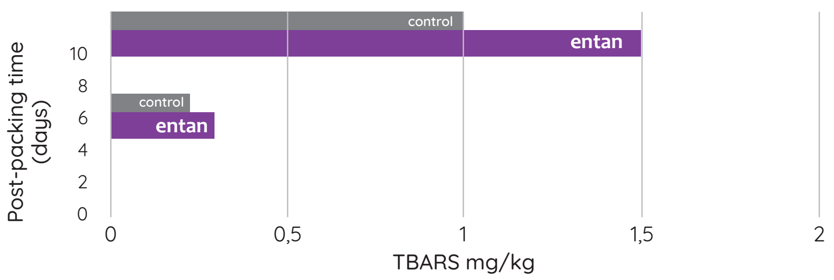
APPLICATIONS AND BENEFITS

Improves production performance

Improves reproductive performance

Replacement of vitamin E and chemical functional antioxidants

INCREASES THE QUALITY AND SHELF-LIFE OF THE FINAL PRODUCT



TBARS parameter

The TBARS parameter was used as an indicator of lipid oxidation in loin samples.

Two-stage evaluation

The samples were evaluated at 6 and 12 days post-packing.

entan reduces lipid oxidation in meat products, increasing their shelf-life

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AOX capacity to be supplied as an additive directly in the feed.

Ideal for improving antioxidant systems at the systemic level.

High efficiency to mitigate the effects of oxidative stress in intensive animal production systems.

entan 100

Ultra-concentrated version of **entan.**

Specially developed for nutritional correctors.

Substitution of additional vitamin E for antioxidant purposes in animal nutrition.

Substitution 1:20 (50% vitamin E)

entan WS

All the power of **entan** in a water-soluble presentation to be supplied in the animals' drinking water.

Ideal for applications at specific times, to specific batches or at periods of special environmental stress.

DOSAGE

	entan	entan 100	entan WS
	100 - 300 g/ton	10 - 30 g/ton	100 - 300 g/1000L
		Substitution 1:20 of up to 50% of the vitamin E	Treatment: up to 500g /1000L (stress, pathologies...) in one week

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